UNIVERSITI TEKNOLOGI MARA

SMART BIOSECURITY DOOR LOCKING SYSTEM

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BACHELOR OF COMPUTER SCIENCE (HONS.)

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Thesis submitted in fulfilment of the requirements
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SUPERVISOR APPROVAL

SMART BIOSECURITY DOOR LOCKING SYSTEM

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This thesis was prepared under the supervision of the project supervisor, Mr. Mohd Rahmat bin Mohd Noordin. It was submitted to the Faculty of Computer and Mathematical Sciences and was accepted in partial fulfilment of the requirements for the degree of Bachelor of Computer Science (Hons.).

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JANUARY 31, 2017

STUDENT DECLARATION

I certify that this thesis and the project to which it refers is the product of my own work and that any idea or quotation from the work of other people, published or otherwise are fully acknowledged in accordance with the standard referring practices of the discipline.

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ABSTRACT

Biometric technology which can be used to recognize an individual's identity based on his or her behavioral or physiological characteristics has become one of the most publicized authentication method. Fingerprint authentication has been chosen among other biometric technologies such as hand geometry, keystroke, hand vein, face recognition, iris recognition, signature, voice recognition and gait due to its uniqueness. Besides that, fingerprint has high performance, high distinctive and only requires short processing time. This study uses biometric technology which is fingerprint authentication implemented for door locking system as people nowadays need security systems in every single aspects especially for home security. This system does not require the use of smart card or even password to remember. Furthermore, the system was developed using Fingerprint Matching Algorithm (FMA), Image Processing technique and embedded programming technique. Visual Studio has been used in order to code the program in C#. In addition, some research has been made through observation as well as referring to the published materials and the existing application of fingerprint and Raspberry Pi. In this paper, Rational Unified Process (RUP) is being used in order to accomplish a perfect result and ensure that the objectives of the project can be achieved. This methodology is chosen because it is suitable for small development teams. There are four phases involved which are inception, elaboration, construction and lastly, transition. As expected, the algorithm applied in this project is effective and can help users to increase their home security level. In conclusion, this project was a success and satisfied all scopes required.

Keywords

Biometric, fingerprint, raspberry pi, fingerprint matching algorithm, image processing, embedded